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The purpose of this study was to determine the effectiveness of visual perceptual training on word recognition and reading achievement of disadvantaged first grade pupils. The experimental groups received the Frostig Program for the Development of Visual Perception in addition to the regular readiness program for a period of 12 weeks. The control groups received the readiness program as outlines in the Teacher's Manual of the basal series. Testing was done at the end of 12, 18, and 24 weeks using the Gates Primary Reading Tests to measure word recognition and reading achievement. Analysis of variance treatment indicated that both groups showed significant gains on both total reading and word recognition scores at the end of the 24 weeks. Interpretation of the results of this study question the use of the Frostig material with disadvantaged children. (EF)

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U. S. DEPARTMENT OF
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Hattiesburg, Mississippi

August, 1968

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SUMMARY

EFFECTIVENESS OF A SPECIAL PROGRAM FOR DEVELOPMENT OF WORD RECOGNITION BY CULTURALLY DISADVANTAGED FIRST GRADE PUPILS

Purpose

The purpose of this study was to determine the effectiveness of visual perceptual training upon word recognition and subsequent reading achievement of culturally disadvantaged first grade pupils.

Procedures

The investigation employed two Groups: the Experimental Groups received the Frostig Program for the Development of Visual Perception for a period of twelve weeks in addition to the regular readiness program, and the Control Groups received the readiness program as outlined in the Teacher's Manual of the regular basal reading series.

The subjects for this investigation were forty-eight first grade students of East Livingston Elementary School, Town of Albany, Louisiana, during the school year 1967-1968. The students were from families with annual incomes of $3,000.00 or less, and of parents with eight years or less of schooling.

During the second week of the school term each pupil was administered the Metropolitan Readiness Test, the

Peabody Picture Vocabulary Test, the Puretone Audiometer Test, the Keystone Visual Survey Test, and the Frostig Developmental Test of Visual Perception.

The results of the Metropolitan Readiness Test indicated that all the pupils were achieving below low-average. The vision of all the pupils was found to be within the expected normal limits according to the Keystone Visual Survey Test, and no evidence of loss of hearing was indicated as measured by the Puretone Audiometer Test.

At the end of the twelve week training period, the Gates Primary Reading Test Form I was administered to the pupils. The Form II of the Gates Primary Reading Test was administered to the pupils at the end of eighteen weeks, and Form III of the Gates Primary Reading Test was administered at the end of twenty-four weeks.

The data were treated by an analysis of covariance to test the significance of the differences between the means of the Control Groups and the means of the Experimental Groups.

Findings

The findings included the following:

1. The hypothesis that no difference would be revealed in the level of word recognition between the Experimental Group and the Control Group was partially supported. The significant mean difference shown in test results for Test II reflected a change in the Experimental Group beyond

the .01 level. At the end of the twenty-four weeks, the significance had disappeared.

2. Only partial support was yielded for the hypothesis that no significant difference would exist in the total reading scores of the Control Group and the Experimental Group. The difference between the means of the two groups on Test II was significant beyond the .05 level. Analysis of these means at the end of twenty-four weeks, Test III, failed to indicate any significant difference.

3. The final hypothesis was that no difference would be revealed in the progress of reading achievement between the Control Group and the Experimental Group in either word recognition or total reading score. Analysis of variance data indicated that both groups showed significant gains on both total reading score and word recognition.

Recommendations

On the basis of the data analyzed throughout this study, the following recommendations are offered:

1. Increase the dimension of investigation by extending the Frostig Program to allow an increased number of lessons to be taught to the Experimental Group.

2. Measure the reading achievement at the end of the second and third grades in order to determine the progress of reading achievement.

3. Increase the dimension of investigation by extending the grade limit of the basal reading readiness program for the culturally disadvantaged pupil in an effort to determine the effectiveness of the basal readiness program as compared to the Frostig Program.

4. The introduction of Frostig material in a planned and sequential manner apparently does not result in more effective word recognition in total reading achievement for disadvantaged pupils. Therefore, though not conclusive, this study does suggest that some early introductory changes would, perhaps, support recognition and total reading achievement of the culturally disadvantaged pupil. Therefore, the factor of effectiveness of training for visual perception should receive additional consideration.

CHAPTER I

THE PROBLEM AND REVIEW OF LITERATURE

Educators and psychologists indicate there is a need for research in the field of coordinating methods and materials compatible to the developmental levels of children. Evidence reveals that the majority of middle-class children learn amazingly well in the present school system. Furthermore, evidence substantiates that culturally disadvantaged children are frequently behind their peers.[1] The methods and materials that are useful to the average child do not seem to help the culturally disadvantaged child acquire the vital communication and computation skills which are necessary for adequate achievement in school. This range in the ability to achieve is a source of frustration to the teacher as well as to the culturally disadvantaged child. Consequently, the teacher and the child are ready to admit defeat.[2]

A demand exists for supplementary materials to meet the needs of the culturally disadvantaged child who is

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[1]Joe L. Frost and Glenn H. Hawkes (ed.), The Disadvantaged Child: Issues and Innovations (New York: Houghton Mifflin Company, 1966), p. 8.

[2]Benjamin S. Bloom, Allison Davis, and Robert Hess, Compensatory Education for Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1965), p. 20.

entering school. Bereiter and Engelmann indicate that a sensory deprivation is a well established phenomenon among the culturally disadvantaged.[1]

Many reading problems of the culturally disadvantaged child are likely to be related most directly to the very meager experience in visual perceptual abilities.[2] Unfortunately, many culturally disadvantaged children exhibit an impediment in their visual perceptual development. A child with an impediment in this particular area is handicapped in recognizing objects and their relationships one to the other. This child will have difficulty in academic learning no matter how intelligent he may be.[3]

The use of visual perceptual training materials as a supplement to the readiness materials may provide effective training for the child with this difficulty in visual perception.

The Problem

The purpose of this study is to determine the effectiveness of visual perceptual training upon word

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[1]Carl Bereiter and Siegfried Engelmann, Teaching Disadvantaged Children in the Preschool (Engelwood Cliffs, New Jersey: Prentice-Hall, Inc., 1966), p. 16.

[2]Patricia Cayo Sexton, Education and Income (New York: The Viking Press, 1961), p. 32.

[3]Marianne Frostig and David Horne, Teacher's Guide: The Frostig Program for the Development of Visual Perception (Chicago: Follett Publishing Company, 1964), p. 7.

recognition and subsequent reading achievement of the culturally disadvantaged pupil who is in the first grade.

An exploratory training program in visual perception for the culturally disadvantaged pupils in the first grade was conducted at the East Livingston Elementary School, Albany, Louisiana, during the school year of 1967-1968. The regular curriculum was not altered from that specified in the parish lesson plan.

The basal reading readiness program was supplemented for two Experimental Groups through the use of the Frostig Program for the Development of Visual Perception. The two Control Groups received the regular basal reading training.

Hypothesis

The hypothesis tested stated that no difference would be revealed in the level of word recognition between the Experimental Groups consisting of pupils receiving the Frostig Program for the Development of Visual Perception and the Control Groups consisting of pupils receiving the traditional orthography.

No difference would exist in the level of reading achievement between the Experimental Groups of pupils receiving experience in the traditional orthography procedures in reading.

No significant difference would exist in the progress of reading achievement between the Control Groups and the Experimental Groups.

Importance of Study

Frost and Hawkes state that by the time the culturally disadvantaged child enters school he is retarded in the skills that are pre-requisite to successful school achievement.[1] Research shows that perception among culturally disadvantaged children differs significantly from that of middle-class children.[2] The style of learning of the culturally disadvantaged is geared to respond much more readily to visual kinesthetic signal.[3] Furthermore, evidence indicates that a child entering school with accurate visual perceptual abilities should be successful in achieving at his grade placement. Therefore, supplementing the reading readiness activities with additional visual perceptual training may be one method of meeting the need of the culturally disadvantaged child.

The findings of this study may indicate a need for curricular adjustment in the first grade in order that the culturally disadvantaged child may acquire the skills necessary for successful achievement in school.

The significant evidence gathered through this study should indicate the use of visual perceptual training to

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[1]Frost and Hawkes, The Disadvantaged Child: Issues and Innovations, p. 11.

[2]Ibid., p. 280.

[3]Ibid., p. 55.

be an aid to the culturally disadvantaged child in achieving success in reading.

Definition of Terms

Culturally Disadvantaged Child

The term "culturally disadvantaged child" was used in this study to indicate children whose parents have annual incomes of $3,000.00 or less and whose parents have eight years or less of schooling.[1]

Frostig Developmental Test of Visual Perception

These tests were devised to measure the different visual perceptual tasks of young children. It was used in this study as a measure of proficiency of visual perception. The Frostig Developmental Test of Visual Perception contains five sub-tests assessing relatively distinct functions of visual perception. They are as follows: (1) Eye-Motor Coordination, (2) Figure-Ground, (3) Constancy of Shape, (4) Position in Space, and (5) Spatial Relationship. The individual functions of each sub-test is as follows: (1) Eye-Motor Coordination, a test of eye-hand coordination involving the drawing of continuous straight, curved, or angled lines between boundaries of various widths or from point to point without guide lines; (2) Figure-Ground, a test involving shifts in perception of figures against increasing difficulty of figures;

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[1]Robert J. Havighurst and Bernice L. Neugarten, Society and Education (Boston: Allyn and Bacon, Inc., 1962), p. 32.

(3) Constancy of Shape, a test to measure the ability to recognize certain geometric figures in various sizes, shapes, textures, and shadings (circles, squares, rectangles, ellipses, and parallelograms); (4) Position in Space, a test to measure the ability to discriminate the reversals and rotations of figures presented in series; (5) Spatial Relationship, a test involving the analysis of simple forms and patterns (this test requires the child to draw lines of various lengths and angles).[1]

The Frostig Program for the Development of Visual Perception

The Frostig Program for the Development of Visual Perception was utilized in this study to train children in visual perception regardless of the age or the academic level of the children. The concentration of attention of these skills through both visual and kinesthetic (tactile) approaches, without the distracting effect of attention to other disciplines, enables the child to develop the perceptual skills. The material consists of five basic areas. They are described as follows: (1) Perception of Position in Space: These exercises are designed to develop the child's recognition of the formation and directionality of figures and characters; (2) Perception of Spatial Relationship: The object of these exercises is to develop the child's

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[1]Marianne Frostig, Manual: Developmental Test of Visual Perception (Palo Alto, California: Consulting Psychologists Press, 1966), p. 5.

ability to perceive positional relationship between various objects; (3) Perceptual Constancy: The exercises in this category develop the child's perception and identification of forms regardless of differences in size, color, texture, position, background, or angle of viewing; (4) Visual-Motor Coordination: These exercises help to develop printing, writing, and drawing skills through practice in such tasks as drawing from point to point, and reproducing some basic strokes used in printing; (5) Figure-Ground Perception: The exercises for figure-ground perception include isolation and recognition of overlapping, intersection, hidden figures, figure completion, and reversals of figure and ground.[1]

Gates Primary Reading Tests

The Gates Primary Reading Tests include tests designed to measure the level and the range of reading at the first grade level. Each test includes measures of word recognition, sentence reading, and paragraph reading. The first two sub-tests involve the association of words and pictures illustrating the word or the sentence. The third sub-test measures the pupil's comprehension by testing his ability to mark the related picture in accordance with the instruction contained in the paragraph. The tests

[1]Ibid., p. 11.

are designed for use in the first grade and in the first half of the second grade.

Gates Primary Word Recognition Test has forty-eight items to be attempted within a fifteen minute time limit. In each item, four words and a picture are presented. One word is to be selected which belongs with the picture. The items increase in difficulty throughout the test. The Word Recognition Test measures the ability to read words typical of primary vocabulary. This test is an estimate of the child's readiness to do independent reading.[1]

Gates Sentence Reading Test has forty-five sentences in text, three in each of fifteen exercises. The pupil reads the first sentence in the test item and marks with a single line the picture which illustrates its meaning; he reads the second sentence and marks the correct picture with two lines; he reads the third sentence, marking the correct picture with three lines.

This test measures the ability to read sentences of increasing length and complexity. The sentences are composed of words most commonly found in primary reading material. It also indicates the pupil's ability to utilize context and other clues.[2]

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[1]Arthur I. Gates, Manual for the Gates Primary Reading Tests (New York: Bureau of Publications, Columbia University, 1958), p. 1.

[2]Ibid., p. 2.

Gates Paragraph Reading Test includes twenty-six items to be attempted within a twenty minute time limit. Each exercise in the paragraph reading test presents illustrations which are to be marked according to the directions given in the accompanying paragraph. The items increase in length and complexity throughout the test. The purpose of this test is to measure the ability of the child to read typical primary material with understanding.[1]

Peabody Picture Vocabulary Test

The Peabody Picture Vocabulary Test was used in this study to measure the mental ability of the subjects. The Peabody Picture Vocabulary Test is designed to provide a well standardized estimate of the subject's verbal intelligence through a measurement of his hearing vocabulary. It compares favorably in validity, as demonstrated on the basis of its correlations with the Stanford-Binet Intelligence Test.

The Peabody Picture Vocabulary Test is an untimed individual test, administered in 15 minutes or less, consisting of a booklet with 3 practice items, 150 plates, each with 4 numbered pictures. The examiner reads the stimulus word, and the subject responds by pointing to, giving the number of, or otherwise indicating the best picture illustrating the stimulus word. The items are arranged in ascending order of difficulty and the subject responds only to the items between his basal and ceiling levels.

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[1]Ibid.

The total score can be converted to a standard score deviation I.Q. with a mean of 100.

Metropolitan Readiness Tests

Form R of the Metropolitan Readiness Test was utilized in this study to measure the subject's readiness for reading.

This test was devised to measure the traits and the achievements that contribute to beginner's readiness for first grade instruction. The content is entirely pictorial and yields three readiness scores - reading, number, and total. The student is to mark or to copy according to instructions given to him orally by the examiner. The total raw score is translated into a percentile rank.

Research indicates favorable correlation between achieved scores of the Metropolitan Readiness Test and success in the first grade as measured by the Metropolitan Achievement Test.[1]

Visual Perception

The term "visual perception" was defined for this study as the extent to which a person is able to recognize a visual stimulus or the awareness of a visual sensation.[2] Visual perception involves the ability to evaluate and

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[1] Ibid., p. 570.

[2] Carter V. Good, ed. Dictionary of Education, ed., (New York: McGraw-Hill Book Company, Inc., 1959), p. 178.

identify the sensory impressions from previous experience. This recognition and evaluation of the stimuli is a process that occurs in the brain, not in the receiving organ.[1]

Review of Literature

The purpose of this study was to determine the effect of visual perceptual training upon word recognition and reading achievement of culturally disadvantaged children. This chapter presents a selective review of the literature pertaining to this topic, with representative studies presented and discussed. Studies regarding the characteristics of the culturally disadvantaged child and studies relating to visual perception as it pertains to reading will be reviewed separately.

Characteristics of the Culturally Disadvantaged Pupil

Much research literature concerning the culturally disadvantaged pupil has been published in recent years. When one considers the many issues which revolve around the problem of the culturally disadvantaged pupil, the problem of education predominates. This literature deals with the development of effective techniques of teaching the culturally disadvantaged child and with the formulation of better understandings of the learning processes as they pertain to the culturally disadvantaged pupil.

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[1]Wendell Wright, Reading Readiness - A Prognostic Study, XII (Bloomington, Indiana: Indiana University, 1936), 26.

Some of this research is based on deduced concepts dependent upon real or interpreted contact with children. Beck and Saxe state that many research studies have been predicated upon theoretical considerations of child development for theories of learning.[1]

They also maintain that teachers have received few answers to the questions related to the specific teaching techniques to modify the curriculum of the culturally disadvantaged child.[2]

Riessman[3] implies that the disadvantaged child and his parents are poorly informed, are not aggressive, are not concerned with status. He explains that the deprived individual is relatively slow at cognitive tasks, but he is not stupid; appears to learn most readily through a physical concrete approach; often appears to be anti-intellectual; is superstitious; is inflexible and not open to blame for his misfortunes; views intellectual activities as unmasculine; appreciates knowledge for its practical vocational ends but rarely values it for its own sake; desires a better standard of living as far as personal comforts for himself but does not wish to adopt a middle-class way of life; is deficient in auditory attention and interpretation skills; reads

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[1]John M. Beck and Richard W. Saxe, Teaching The Culturally Disadvantaged Pupil (Springfield, Illinois: Charles C. Thomas Publishers, 1965), p. 8.

[2]Ibid., p. 9.

[3]Frank Riessman, The Culturally Deprived Child (New York: Harper and Row, Publishers, 1962), p. 9.

ineffectively; is deficient in communication skills; and is suspicious of innovations.[1]

Figurel[2] reports that disadvantaged children understand more language than they use, and that they have a wide hearing or understanding vocabulary. He states, "Less than half of the words in the vocabulary of pre-school grade children in slum areas are contained in prepared reading materials which are now available."[3]

Frost[4] points out that culturally disadvantaged children frequently are crippled in language development because they do not perceive the concept that objects have names and that the same object may have different names.

Black[5] reports that culturally disadvantaged kindergarten children use fewer words with less variety to express themselves than do kindergarten children of higher socio-economic classes and that culturally disadvantaged kindergarten children use a significantly smaller proportion

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[1]Ibid., p. 57.

[2]J. Allen Figurel, "Limitations in the Vocabulary of Disadvantaged Children: A Cause of Poor Reading," Improvement of Reading Through Classroom Practice, Proceedings of the Annual Convention of the International Reading Association, IX (Newark, Delaware: International Reading Association, 1964), 165.

[3]Ibid.

[4]Frost and Hawkes, The Disadvantaged Child: Issues and Innovations, p. 22.

[5]Millard H. Black, "Characteristics of the Culturally Disadvantaged Child," The Reading Teacher, XVIII (March, 1965), 466.

of mature sentence structures. Culturally disadvantaged children also learn less from what they hear than do middle-class children.

The findings of Black's study indicated that culturally disadvantaged children tend to learn more readily by inductive rather than by deductive approaches and that, generally, these children are unaccustomed to insight building by external use of lectures and discussions at home. These children tend to have a poor attention span and need to see concrete application of what is learned for immediate sensory and topical satisfaction.[1] The culturally disadvantaged child often is characterized by significant gaps in knowledge and learning; he has had little experience in receiving approval for success in completing tasks. Evidence indicates that culturally disadvantaged children are characterized by narrow experience outside the home.[2] Black[3] further states that these children are limited in the communication skills and are deprived of many experiences which are an aid in building concepts of things to which they must react in the classroom. With this inability these pupils are unable to achieve at their grade placement.

Measured intelligence quotient, especially verbal intelligence quotient, is a relatively reliable indicator

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[1] Ibid., p. 468.

[2] Ibid.

[3] Ibid., p. 469.

of academic success. Research indicates an agreement between educators and psychologists that there is a high correlation between intelligence quotient and academic success because the tests of achievement are measures of intelligence quotient.[1] They also agree that no instrument of measurement is sufficiently sensitive to measure intellectual ability and yet be culture free. Tests used to measure intelligence are related directly to socio-economic status.[2]

In a review of seventy-two studies involving over thirty-six thousand subjects, Shuey[3] found that the average intelligence quotient on group verbal tests for Negro children is eighty-five. This is in agreement with Klineberg's findings of a median intelligence quotient score for Negro children of eighty-six.[4] The average scores of the disadvantaged children are depressed in comparison to the average scores of the white children of the upper socio-economic level.

Deutsch and Brown[5] used the Lorge-Thorndike Non-Verbal Test to study the intelligence quotient in the first

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[1]Frost and Hawkes, The Disadvantaged Child: Issues and Innovations.

[2]Audrey M. Shuey, The Testing of Negro Intelligence (Lynchburg, Virginia: J. P. Bell Company, Inc., 1958), p. 125.

[3]Ibid.

[4]O. Klineber, Characteristics of the American Negro (New York: Harper and Row, 1944), p. 35.

[5]M. Deutsch and B. Brown, "Social Influences in Negro-White Intelligence Differences," Journal of Social Issues, XX (April, 1964), 30.

and fifth graders in a New York City group. They grouped their data by race, socio-economic status, presence or absence of nursery school or kindergarten experience. They found no statistical difference between the first and fifth graders scores as a whole group. There was a highly significant statistical Negro-white difference. The Negro at each socio-economic level scored lower than did the white at the same socio-economic level. It was evidenced that the Negro children in the upper-middle class group scored significantly higher than did the white children in the lowest socio-economic group. With intelligence quotient being affected by deprivation, it can be implied that deprivation will have a direct influence on the achievement of culturally disadvantaged children.

During the past few years there has been a tremendous influx of pupils who seem unable to take advantage of educational opportunities because these children are culturally disadvantaged.[1] Achievement test results indicated that the culturally disadvantaged child is achieving below his age and grade placement.[2] Sexton[3] reports that pupils from families with an average income of $7,000.00 are achieving above grade level. Pupils from

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[1]Bloom, Davis, and Hess, Compensatory Education for Cultural Deprivation, p. 21.

[2]Sexton, Education and Income, p. 25.

[3]Ibid., p. 27.

families below the average income of $7,000.00 are achieving below grade level. It is observed that as income increases, the achievement grade increases.

Studies indicate that lower income (culturally disadvantaged) groups have serious reading deficiencies which make it almost impossible for them to do well in school. As a result of poor reading skills, many pupils will terminate their education. Success in school seems to be very closely associated with the proficiency of reading skills. H. A. Coleman[1] studied the performance of junior high school students and found a surprising consistency of poor readers among children of low socio-economic level.

In a study of children in the first grade, Miller found that all children in the lower-upper and upper-middle classes made higher scores on a reading readiness test, and that the children in the lower-lower class made lower scores.[2]

Researchers in the field generally support the opinion that pupils from low socio-economic environments will achieve at a lower level in their academic work.

Reading Achievement and Visual Perception

It is mutually agreed upon among vision specialists, psychologists, and educators that visual perceptual

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[1]H. A. Coleman, "The Relationship of Socio-Economic Status to the Performance of Junior High School Students," Journal of Experimental Education, IX (September, 1940), 63.

[2]Ibid., p. 32.

abilities are "learned".[1] With proper visual perceptual training pupils are able to use their eyes more efficiently to achieve their highest degree of visual comfort and performance.[2]

Muehl[3] conducted a study to measure the use of sensory experiences to facilitate visual discrimination among printed words for beginning readers. Because reading readiness workbooks abound in exercises intended to develop and improve word discrimination, the question arises as to whether these exercises are adequate training for improving or developing visual discrimination. The experimenters found that pre-training in matching four words was more effective in learning the same four words than pre-training in matching geometric forms or four other words. Although it would appear to be logical, the reading readiness material may not be logical. Individual needs of children demand that more consideration be given at the beginning of their educational training than at any other time.

Walters and Doan[4] used Vernon's description of perceptual functions in reading, i.e., recognition of word

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[1]Emmett Albert Betts, Foundations of Reading Instruction (New York: American Book Company, 1957), p. 131.

[2]Ibid.

[3]Seighman Muehl, "Effects of Visual Discrimination Pre-Training on Learning to Read a Vocabulary List in Kindergarten Children," Journal of Educational Psychology XXI (August, 1960), 220.

[4]Richard H. Walters and Helen Doan, "Perceptual and Cognitive Functioning of Retarded Readers," Journal of Consulting Psychology, XXVI (August, 1962), 361.

form with ability to distinguish small details of shape and added to the description the function of the association of a symbol with an object or event which is cognitive. Their study attempted to assess changes in reading performance when the reader was motivated (by fear of "looking") as a result of punishment of exploratory behavior in early childhood, particulary curiosity, and that an incentive would affect both generalized perceptual and cognitive lag. The subjects were fifty-four boys in grades seven and eight. The authors offered the conclusion that retarded readers may have difficulty with decision making and with associating symbols with objects, as well as with visual perception.

One factor evident in professional literature concerning reading since 1930 has been the study of visual discrimination. Betts observed that all 1943 reading readiness tests available at that time contained a section which required some kind of visual discrimination.[1] Smith,[2] Wilson,[3] and Gavel[4] provided varying degrees of support for the position that readiness tasks requiring

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[1]Emmett A. Betts, "Factors in Readiness for Reading." Educational Administration and Supervision, XXIX (April, 1943), 212.

[2]Nila Blanton Smith, "Matching Ability as a Factor in First-Grade Reading," Journal of Educational Psychology, XIX (November, 1928), 570.

[3]Frank T. Wilson, "Early Achievement in Reading," Elementary School Journal, XMII (April, 1942), 615.

[4]Sylvia R. Gavel, "June Reading Achievements of First Grade Children," Journal of Education, CXL (February, 1958), 43.

visual discrimination of letters best predict reading achievement in the first grade. On the other hand, the studies of Gates, Bond, and Russell[1] and Gates[2] indicate that visual discrimination of words was the most valuable predictor of reading achievement in the first grade when compared to other visual discrimination tasks. Potter[3] reports that the match-a-shape form of tests had a higher correlation with reading achievement in the first grade than did any one of the several other tests which required subjects to make visual discrimination of letters and words. More recently, Goins[4] determined that four tests involving visual perception of geometric figures and pictures had relatively high correlations with reading achievement in the first grade. She states that these four tests along with the reading achievement test used as a criterion, possesses a heavy P-2 factor saturation which she defined as the ability to keep a figure in mind against distraction. In both investigations the researchers concluded that tasks requiring visual discrimination of geometric figures and

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[1]Arthur I. Gates, Guy L. Bond, and David H. Russell, Methods of Determining Reading Readiness (New York: Columbia University Publications, 1939), p. 42.

[2]Arthur I. Gates, "An Experimental Evaluation of Reading Readiness Tests," Elementary School Journal, XXXIX (March, 1939), 507.

[3]Muriel C. Potter, Perception of Symbol Orientation and Early Reading Success (New York: Columbia University Publications, 1949), p. 55.

[4]Jean Turner Goins, Visual Perceptual Abilities and Early Reading Progress, Supplementary Educational Monographs, LXXXVII (Chicago: University of Chicago Press, 1958), 4.

pictures as utilized in their work appeared to be valuable predictors of reading achievement in the first grade.

Simpson[1] assessed the effectiveness of certain perceptual training activities in reading instruction. Correlations were computed between the perceptual sub-test scores and the total scores of the Metropolitan Reading Test of 312 students in the first grade. The perceptual sub-tests correlated relatively higher with reading achievement than did the traditionally designated reading readiness sub-tests. The experimental group receiving perceptual training attained a significantly greater reading achievement score than did the control group.

Goldmark[2] concluded that visual perception has a significantly higher correlation with word recognition than does auditory perception at the second grade level and that conceptualization was correlated positively with word recognition.

Roberts[3] concluded that visual perception of poor reading achievers was significantly inferior to that of

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[1]Dorothy Margaret Simpson, "Perceptual Readiness and Beginning Reading," (unpublished doctoral dissertation, Purdue University, 1960), p. 75.

[2]Bernice Goldmark, "The Relation of Visual Perception, Auditory Perception, and One Aspect of Conceptualization of Word Recognition," (unpublished Ed.D. dissertation, School of Education, University of Arizona, 1964), p. 121.

[3]Richard W. Roberts and James C. Coleman, "An Investigation of the Role of Visual and Kinesthetic Factors in Reading Failures," Journal of Educational Research, LI (February, 1958), 450.

the normal readers. The reading failures were less efficient than were the normal readers in learning new materials presented by visual cues. The reading failure group learned material more easily when methods comprised both visual and kinesthetic cues. He further concluded that reading failures who obtained normal scores on the visual perception test did not profit from addition of kinesthetic cues.

Schubert[1] points out that the relationship between the development of near-point vision in first graders and the demands made upon them in reading from books may develop negative attitudes toward reading. The implications were that near-point visual training is recommended highly to bring about favorable adjustments in near-point fusion of pupils in the first grade.

Kerfoot[2] suggests that a multiple regression equations design used for predicting reading and spelling achievement from measure of auditory and/or visual discrimination must be derived separately for boys and girls. The combination of variables which predicted effectively in the equations for boys and girls were clearly different. Measures of visual discrimination were better predictors of

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[1]Delwyn G. Schubert, "Visual Immaturity and Reading Difficulty," Elementary English, XXXIV (May, 1957), 324.

[2]James Fletcher Kerfoot, "The Relationship of Selected Auditory and Visual Reading Readiness Measures to First Grade Reading Achievement and Second Grade Reading and Spelling Achievement," (unpublished Ed.D. dissertation, School of Education, University of Minnesota, 1964), p. 244.

reading and spelling achievement than were measures of auditory discrimination. The readiness variables most highly correlated with reading and spelling achievement were word matching, naming letters and numbers, and pattern copying. Separate sex treatment of data indicated the superiority of girls over boys in most aspects of reading behavior measures as well as in spelling.

Papp[1] concludes that it would seem that consideration of the distinctive features of a letter and its similarity should provide insight for training the specific skill in visual discrimination for letters. Remaining as a matter for further research is the problem of determining whether pupils trained to discriminate highly confusable letters on the basis of distinctive features and/or formal similarity then will be able to discriminate accurately all letters, and whether training of this type will have any effect on their later reading achievement.

Shea[2] indicated that intelligence quotient tests and visual discrimination word tests were correlated positively with word recognition tests, the visual discrimination test being the best predictor of word recognition. In her study she found that the Metropolitan Reading Readiness Test was the best predictor of word recognition ability.

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[1]Helen Papp, "Visual Discrimination of Alphabet Letters," The Reading Teacher, XVII (January, 1964), 225.

[2]Carol Ann Shea, "Visual Discrimination of Words as a Predictor of Reading Readiness," (unpublished Ph.D. dissertation, School of Education, University of Connecticut, 1964), p. 66.

There was a high correlation between achievement and visual discrimination and a positive correlation between achievement and the intelligence quotient test results.

Bing[1] found that any part of the total visual process failing to operate satisfactorily will cause some interference with visual performance and school achievement.

Summary of Review Literature

Educators and psychologists agree that many reading problems of the culturally disadvantaged child are likely to be related most directly to the very meager experience in visual perceptual abilities. Research indicated that many culturally disadvantaged children exhibit an impediment in visual perceptual development and that children with this handicap may have difficulty in academic learning no matter how intelligent they may be.

There is also support for the considerations that children from low socio-economic environments will achieve at an inferior level in reading and that culturally disadvantaged children who are handicapped in visual perception are frequently retarded in language development.

Based on the significant research results reported for visual discrimination as a predictor of reading success and the established deficiency of the culturally disadvantaged pupil in visual perceptual abilities, the supplementation of the reading readiness program with

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[1]Lois B. Bing, "Vision and Reading," The Reading Teacher, XIV (March, 1961), 241.

additional visual perceptual training should be an effective method in developing word recognition and increasing subsequent reading achievement and thereby meet the needs of the culturally disadvantaged pupil. A comparison of the reading achievement of the culturally disadvantaged pupil receiving visual perceptual training with a control group receiving the basal reading readiness program became the extent of this study.

CHAPTER II

CONDUCT OF EXPERIMENT

This experiment was conducted to determine the effectiveness of supplementing the basal reading program with the Frostig Program for the Development of Visual Perception. It was conducted in order to measure the effectiveness of visual perceptual training upon word recognition and subsequent reading achievement of culturally disadvantaged pupils in the first grade.

Delimitation

This study conducted in the school year 1967-1968 included forty-eight pupils in the first grade of the East Livingston Elementary School of Albany, Louisiana.

The teachers of the two sections of the first grade are from quite similar cultural backgrounds. Both teachers hold Bachelor of Science degrees in Elementary Education and were certificated as elementary teachers by the same teacher training institution. Supervisors and principals judged both teachers as having exhibited similar interests and motivations in innovative practices with culturally disadvantaged children. The judges also indicated no evidence of prejudice or bias in the teaching activities of either teacher.

Aside from the experimental training techniques that were added to the regular program of the experimental training groups, the basic curriculum remained the same for all of the pupils. The teachers employed the "Look and Say" method in their reading instruction and no attempt was made to alter or standardize the teacher's methods of motivation and presentation. It was not the purpose of this study to include age or sex factors, there being no matching of subjects.

Procedures

The investigator employed two treatment groups. (See Figure 1.) The Experimental Groups, (G1, G2) received the Frostig Program for the Development of Visual Perception for a period of twelve weeks in addition to the regular basal reading program. The Control Groups, (G3, G4) received the basal reading program as outlined in the Teacher's Manual of the basal series.

At the end of twelve weeks, the pupils were administered the Gates Primary Reading Test Form I. The pupils were administered Form II of the Gates Primary Reading Test at the end of eighteen weeks. Form III of the Gates Primary Reading Test was administered to the pupils at the end of twenty-four weeks.

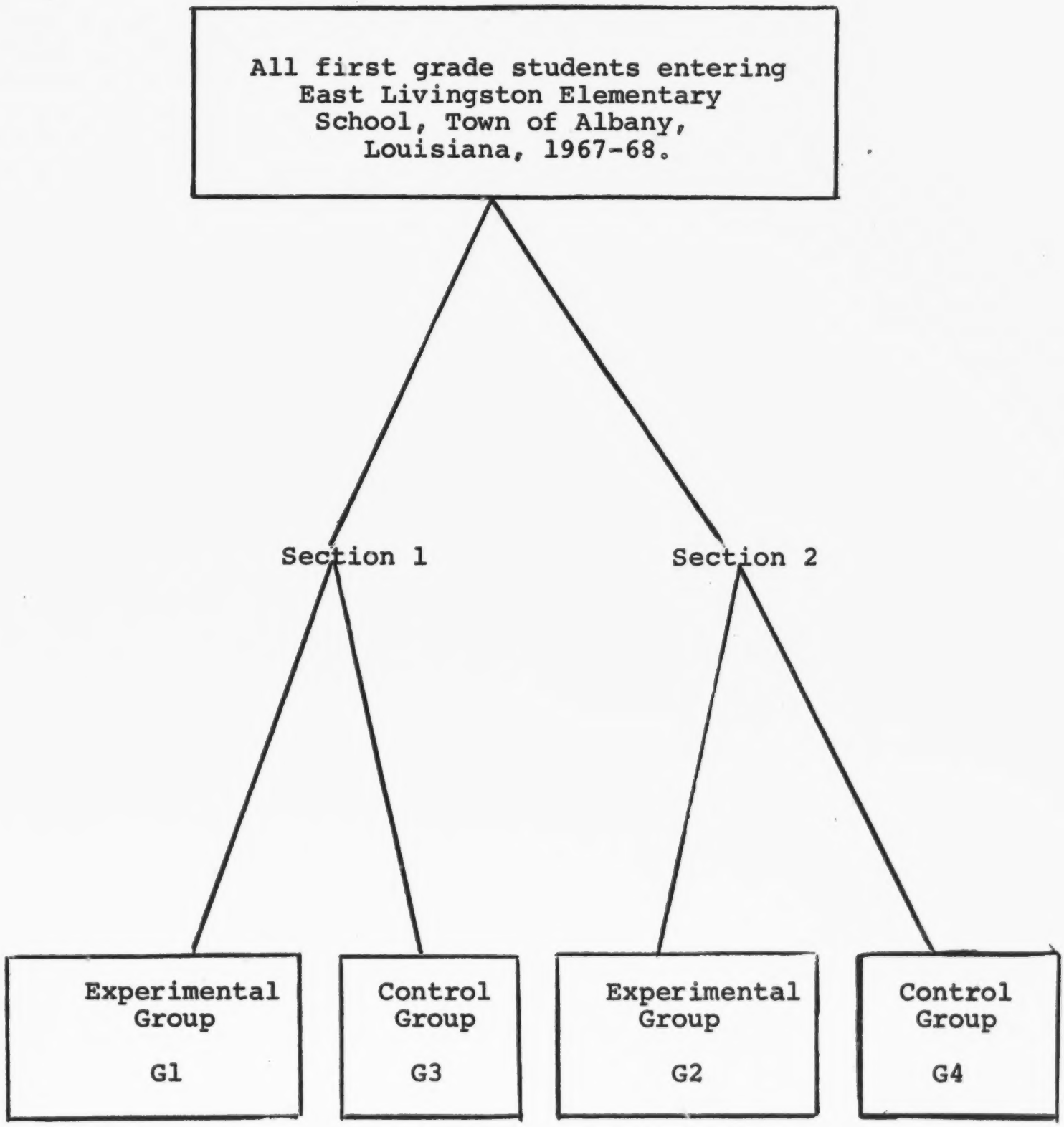

FIGURE 1

EXPERIMENTAL DESIGN

Subjects

The subjects for this investigation conducted in the school year of 1967-1968 were forth-eight pupils in the first grade of the East Livingston Elementary School, Albany, Louisiana.

No effort was made to structure or fix the procedure for class enrollment. Any pupil eligible by age for the first grade was permitted to enter school. Any chance of skewing of the population of subjects was negated through a careful randomization into the experimental groups.

Class and Group Selection

The pupils were from families with an annual income of $3,000.00 or less, and were of parents with eight years or less of schooling.

A Table of Random Numbers was entered and utilized in a predetermined manner to divide the pupils into two classes.

During the third week of the school term each pupil was administered the Metropolitan Readiness Test, the Peabody Picture Vocabulary Test, the Keystone Visual Survey Test, the Puretone Audiometer Test, and the Frostig Developmental Test of Visual Perception.

The results of the Metropolitan Readiness Test indicated that all the pupils were achieving below low-average. The vision of all the pupils was found to be within the normal limits according to the Keystone Visual Survey Test, and no evidence

of loss of hearing was indicated as measured by the Puretone Audiometer Test.

A table of random numbers was used to assign, at random, the pupils into two groups in each section. Each section had one Control Group and one Experimental Group, and each group contained twelve pupils.

Classroom Procedure

All of the pupils received readiness training as outlined in the Teacher's Manual of the basal series. No attempt was made by the researcher to guide, supervise, or stereotype the classroom procedure. Differences in instructional approach and in the presentation of materials were accounted for through randomization of pupil assignment into the two sections.

The Control Groups (G3, G4)

The Control Groups received the regular reading program as outlined in the Teacher's Manual of the basal series.

During the time that the Experimental Groups received the visual perception training, the Control Groups participated in unrelated activities conducted in a separate classroom. A responsible high school student assigned to these groups played records for the pupils and led them in group singing.

The Experimental Groups (G1, G2)

The Experimental Groups were assigned supplementary classroom activities in addition to their regular classroom

procedures. The additional activity consisted of participating in the Frostig Program for the Development of Visual Perception for a period of twelve weeks.

The Frostig Program for the Development of Visual Perception was used to provide additional training in visual perception, the members of the Experimental Groups being required to complete daily exercises in five areas of visual perceptual training. These were as follows: (1) Visual-Motor Coordination, (2) Figure-Ground Perception, (3) Perceptual Constancy, (4) Perception of Position in Space, and (5) Spatial Relationship.

Each of the five areas of visual perceptial training outlined in the manual of the Frostig Program for the Development of Visual Perception is described as follows:

Visual-Motor Coordination. Visual-Motor Coordination exercises involve the subjects' drawing of continuous straight, curved, or angled lines between boundaries of various widths or from point to point without guide lines.

Figure-Ground Perception. Figure-Ground Perception exercises involve the subjects in shifts in perception of figures against a complex background. Intersecting and hidden geometric forms were used for this training.

Perceptual Constancy. Perceptual Constancy training involves the recognition of certain geometric figures presented in a variety of sizes, shadings, textures, and position in space, and their discrimination from similar

geometric figures. Circles, squares, rectangles, ellipses, and parallelograms were used for this training.

Perception of Position in Space. Perception of Position in Space involves the discrimination of reversals and rotations of figures presented in a series. Schematic drawings representing common objects were used.

Spatial Relationship. Spatial Relationship involves the analysis of simple form and pattern which consisted of lines of various lengths and angles the pupils were required to copy using dots as guide points.

The training was presented in a formal manner with every pupil in the Experimental Groups performing exercises in a different area of visual perceptual training each day of the school week. The training sessions were conducted at 10:30 a.m. each morning and lasted for approximately fifteen minutes.

The exercises were duplicated from a Ditto-Master from the Frostig Program for the Development of Visual Perception. Every Friday afternoon the teachers cooperating with the experiment were given specific instructions concerning the exercises.

The cooperating teachers had individual folders for each of the exercises as well as a folder for each pupil. The teachers gave the instructions orally and made the necessary illustrations on the chalkboard to assure that each pupil understood the instructions. After the pupils

completed the exercise assignment for that particular session, the teacher placed the exercise in the pupil's folder.

After the day's training sessions with the Experimental Groups were terminated, the Control Groups returned to their respective classrooms and the teachers resumed their regular classroom activities with the entire class in attendance.

Type, arrangement, and size of furniture in the classroom was parallel with that usually found in a regular elementary school classroom. No stereotype furniture and/or equipment arrangement was employed during the experiment.

The same type of furniture was used in the room in which the Control Groups worked during the training sessions. In the room housing the Control Groups, desks were arranged in a semi-circle so that the pupils could face a record player. The high school student played recordings appropriate to the interest and grade level of the pupils. Twice weekly the pupils sang along with the recording.

No other special materials or activities were provided or employed during the time in which the Control Groups were absent from their regular classrooms.

Data Collection

Test Schedule

Because of the maturation factor in early childhood development and because of the need to depict results over

repeated measures, three forms of the Gates Primary Reading Test were administered. All groups were tested at the same time and on the same date, the first test being given at the end of the training program, the second test being given at the end of eighteen weeks, and the third test being administered at the end of twenty-four weeks.

Gates Primary Reading Tests

Subjects were evaluated through the administration of the Gates Primary Reading Tests; these tests were given for the purpose of measuring word recognition and subsequent reading achievement.

The series of the Gates Primary Reading Tests includes tests designed to measure the level and the range of reading at the first grade level. Each test includes measures of word recognition, sentence reading, and paragraph reading. The first two sub-tests involve association of words and pictures illustrating the word or the sentence. The third sub-test measures the pupil's comprehension by testing his ability to mark the related picture in accordance with the instruction contained in the paragraph. The tests are designed for use in the first grade and in the first half of the second grade.[1]

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[1]Gates, "An Experimental Evaluation".

Scoring

The Word Recognition Test was scored by noting the number of correct responses minus one-third the number incorrect. The raw score was interpreted into reading grade placement and reading age level. These were computed from the accompanying manual.[1]

The Sentence Reading Test was scored by counting the total number correct. The raw score was computed into reading grade placement and reading age level. The levels were interpreted from the accompanying manual.[2]

The Paragraph Reading Test was scored by counting the total number correct. The raw score was interpreted from the manual into reading grade placement and reading age level.[3]

Validity

No discussion of validity accompanied the tests. A critical analysis of the test passages indicated that the test exercises were reasonably valid measures of the work recognition, sentence reading, and paragraph reading.[4] A number of studies indicate that the Gates Primary Reading

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[1] Ibid., p. 6.

[2] Ibid., p. 7.

[3] Ibid.

[4] Buros, The Fourth Mental Measurements.

Tests are valid measures of reading achievement when compared with other reading achievement tests.[1]

Reliability

No statistical data on the reliability of the tests are provided. The author of the tests indicates that the reliability of the results of the tests is determined primarily by the skill of the examiner, and the explanation of the tasks to the pupils in addition to the management of the group during the test period. Careful directions are provided as an aid to the teacher in properly administering the tests. Buros[2] points out that the reliability of the test for sentence reading may be reduced by the marking device employed. He further states that experience indicates that some children are unable to indicate clearly whether they are marking one, two, or three parallel lines as stated in the directions.[3]

Norms

Tables of grade and age norms are given in the manual. Grade and age norms for each test score are provided bases on records from approximately 250,000 pupils in schools in all sections of the country. No measure of variability was provided except as suggested by the 75th and 25th percentile scores for various grade levels.[4]

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[1]Warren D. Fortenberry and Billy J. Broome, "Comparison of the Gates Reading Survey and the Reading Section of the Wide Achievement Test," Journal of Developmental Reading, VII (Autumn, 1963), 67.

[2]Buros, The Fourth Mental Measurements.

[3]Ibid.

[4]Ibid.

CHAPTER III

RESULTS

The purpose of this study was to determine the effectiveness of visual perceptual training upon word recognition and subsequent reading achievement of the culturally disadvantaged first grade pupil.

The data were treated by an analysis of covariance[1] to test the significance of the differences between the means of the Control Group and the means of the Experimental Group. Where the analysis indicated statistically significant differences between the means, the data were examined with the use of the Fisher Test for significance.[2]

Due to the exploratory nature of the study, the decision was made to use the .05 level of significance. The assumption was that if this level of significance were obtained, it would be sufficient to imply the feasibility of widened research and further investigation.

The Experimental Group received the Frostig Program for the Development of Visual Perception for a period of

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[1]E. F. Lindquist, Design and Analysis of Experiments in Psychology and Education (Boston: Houghton Mifflin Company, 1956), p. 180.

[2]Ibid., p. 60.

twelve weeks in addition to the regular basal reading program. The Control Group received the readiness program as outlined in the Teacher's Manual of the basal series.

At the end of the twelve week training period, the pupils were administered the Gates Primary Reading Test Form I. The pupils were administered Form II of the Gates Primary Reading Test at the end of eighteen weeks, and Form III of the Gates Primary Reading Test at the end of twenty-four weeks.

Test Results

An analysis of the mean differences between the Control Group and the Experimental Group in terms of deviation intelligence quotients is presented in Table 1. No significant difference existed between the means of the two groups in deviation intelligence quotients as measured by the Peabody Picture Vocabulary Test.

TABLE 1

Summary of the Mean Deviation I.Q.'s of the Experimental Group and the Control Group

GROUP	DF	MEAN	SD	F
Experimental	24	63.4	16.66	3.12
Control	24	71.3	14.31	

An analysis of variance of the five sub-tests of the Frostig Developmental Test of Visual Perception of the Experimental Group and the Control Group is shown in Table 2. No significant difference existed between the means of the two groups as measured by the Frostig Developmental Test of Visual Perception.

TABLE 2

Analysis of Variance of the Results of the Frostig Developmental Test of Visual Perception of the Experimental Groups Versus the Control Groups

Test	Experimental	Control	f
I	56.25	56.00	.03
II	48.12	49.00	1.78
III	61.00	62.00	.62
IV	42.12	44.87	1.87
V	57.87	58.75	1.15

The findings of this study, as they are related to the hypothesis concerning the effect of visual perceptual training upon word recognition, are found in Table 3.

TABLE 3

Analysis of Covariance Between Means of Test I, II and Test III of the Experimental Group and the Control Group on the Gates Word Recognition Test with I.Q. Constant

Test	Experimental	Control	f
I.Q.	63.4	71.3	3.12
I	78.99	79.135	4.173*
II	80.294	79.539	9.51*
III	80.049	80.0447	1.63

*Significant at the .05 level of confidence

The results of the between-groups analysis indicate that the mean difference for word recognition was not statistically significant on Test I and Test III; on Test II the mean difference was significant at the .05 level of confidence.

Hypothesis I

The hypothesis that no difference would be revealed in the level of word recognition between the Experimental Group consisting of pupils receiving the Frostig Program for the Development of Visual Perception and the Control Group consisting of pupils receiving the traditional orthography was partially supported. The significant mean difference shown in the test results for Test II reflects a change in the Experimental Group beyond the .05 level. At the end of twenty-four weeks, however, as indicated by the third testing, the significance had disappeared.

The mean results on the Gates Primary Word Recognition Test administered to the Experimental Group at the end of the twelve, eighteen, and twenty-four week periods are graphically depicted in Figure 2.

The mean on the test at the end of the twelve week period of the Experimental Group, produced by the Gates Word Recognition Test Form I, was 79. Twenty-four subjects with a scoring range of from 79 through 80 contributed to the test totals. The test results mean of the eighteen

week test of the Experimental Group, as produced by the Gates Word Recognition Test Form II was 80.33; the scores ranged from 79 through 82. These results indicated an increase of 1.33 mean score units beyond the twelve week test. The mean for the twenty-four week test was 80.79, an increase of .46 mean score units over the eighteen week test. These scores ranged from 79 through 83.

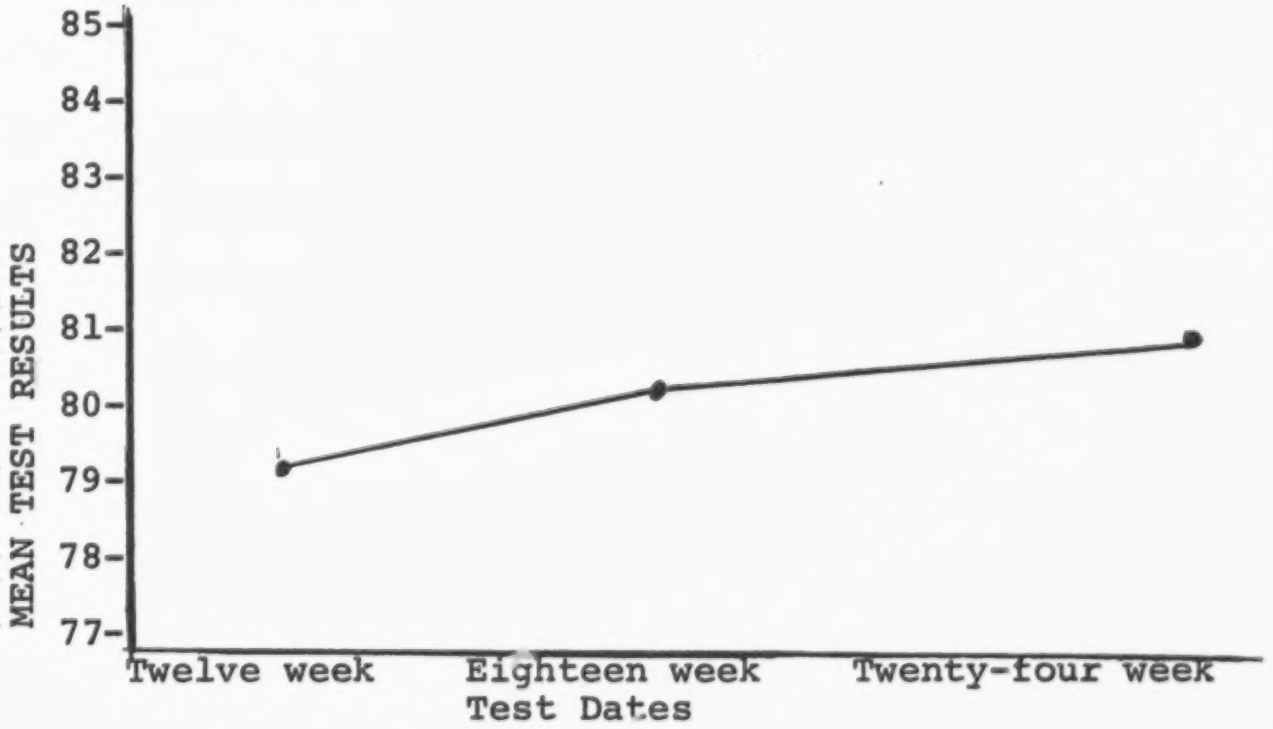

Figure 2. Mean Test Results of the Experimental Group on the Gates Word Recognition Test

The Gates Word Recognition Test Form I test results for the test periods of twelve, eighteen, and twenty-four weeks on the Control Groups are graphically shown in Figure 3.

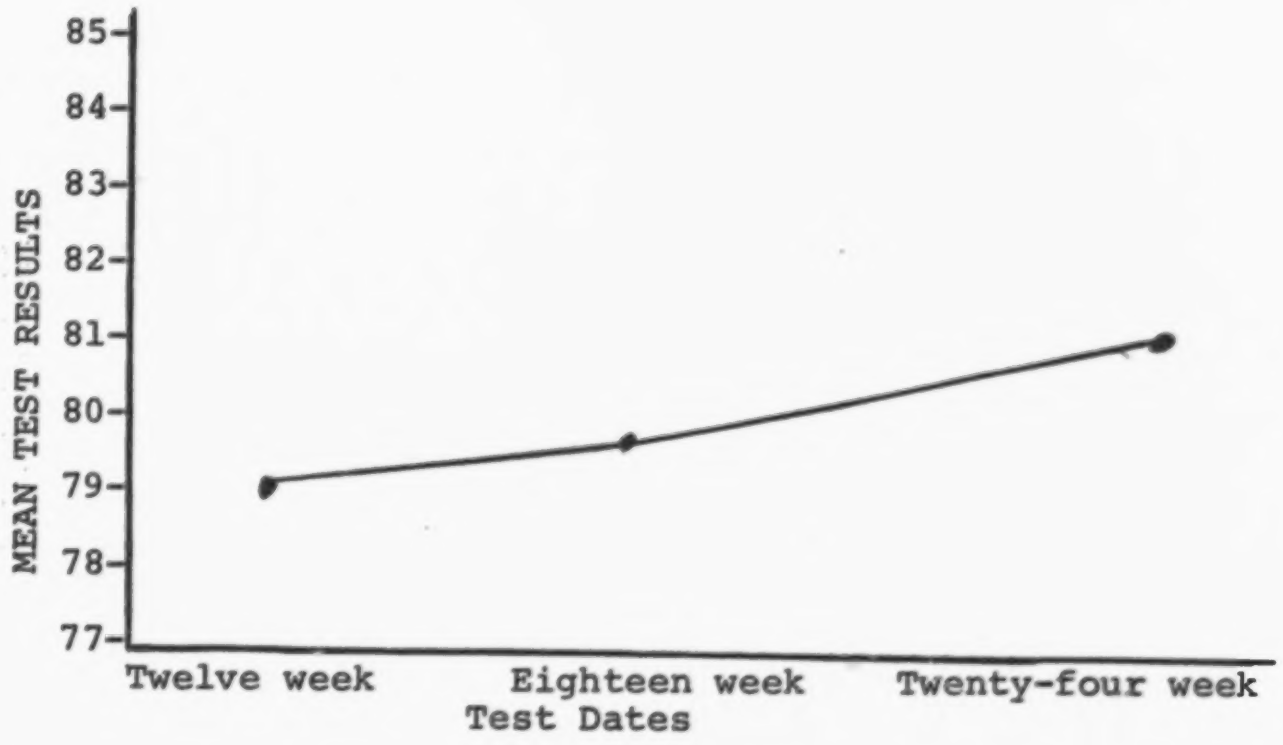

Figure 3. Mean Test Results of the Control Group on the Gates Word Recognition Test

The twelve week test mean of the Control Group was 79.12. Twenty-four subjects with a scoring range of from 79 through 80 comprised the data utilized in determining this mean. The eighteen week test, with scores ranging from 79 through 81 resulted in a test mean score of 79.50, an increase of .38 mean score units. The twenty-four week test mean of 80.41, encompassing a score range of from 79 through 81, reflected an increase of .91 mean score units above the eighteen week test, and an increase of 1.29 mean score units over the twelve week test mean.

Hypothesis II

Only partial support was yielded for the hypothesis that no significant differences would exist in the total reading scores of the Control Group and the Experimental Group. The difference between the means of the two groups

on Test II was significant beyond the .05 level. Analysis of these means at the end of twenty-four weeks, Test III, failed to indicate any significant difference. The results of the analysis for Tests II and III can be seen in Table 4.

TABLE 4

Analysis of Covariance Between the Means of Test II and Test III of the Experimental Group and the Control Group on the Gates Total Reading Scores with I.Q. Constant

Test	Experimental	Control	F
I.Q.	63.4	71.3	3.12
II	79.68	79.042	8.0425*
III	80.369	80.04	1.82

* Significant at the .05 level of confidence

Hypothesis III

The last hypothesis stated that there would be no difference in the progress of reading achievement between the Control Group and the Experimental Group in either word recognition or total reading score. Analysis of variance data indicating that both groups showed significant gains on both total reading score and word recognition are presented in Tables 5, 6, 7, and 8. As a result, the hypothesis was rejected.

TABLE 5

Analysis of Variance of the Gates Primary Word Recognition Test Results of the Experimental Group Between Test Periods I, II, and III Simultaneously

Test Period	I	II	III	F
Mean Score	79.00	80.33	80.79	36.51*

*Significant at the .01 level of confidence

TABLE 6

Analysis of Variance of the Gates Primary Word Recognition Test Results of the Control Group Between Test Periods I, II, and III Simultaneously

Test Period	I	II	III	F
Mean Score	79.12	79.50	80.41	27.65*

* Significant at the .01 level of confidence

TABLE 7

Analysis of Variance of the Total Gates Primary Reading Scores of the Control Group for Test Periods I, II, and III Simultaneously

Test Period	I	II	III	F
Mean Score	79.00	79.08	80.04	37.5*

* Significant at the .01 level of confidence

TABLE 8

Analysis of Variance of the Total Gates Primary Reading Scores of the Experimental Group for Rest Periods I, II and III Simultaneously

Test Period	I	II	III	F
Mean Score	79.00	79.66	80.37	23.7*

*Significant at the .01 level of confidence

The twelve week test mean of the total reading scores as measured on the Gates Primary Reading Test Form I of the Experimental Group was 79. This was comprised of twenty-four subjects, each of whom had a total reading score of 79. The eighteen week test mean was 79.66; the scores ranging from 79 through 82 on the Gates Primary Reading Test Form II. This was an increase of .66 mean score units above the twelve week test. The twenty-four week test mean of 80.37 was determined by the Gates Primary Reading Test Form III. The scores of the twenty-four subjects ranged from 79 through 82. This mean score shows an increase of .71 mean score units over the eighteen week test, and an increase of 1.37 mean score units above the twelve week test.

The twelve, eighteen, and twenty-four week test result means on total reading scores as measured by the Gates Primary Reading Test Form I of the Control Group are graphically shown in Figure 4.

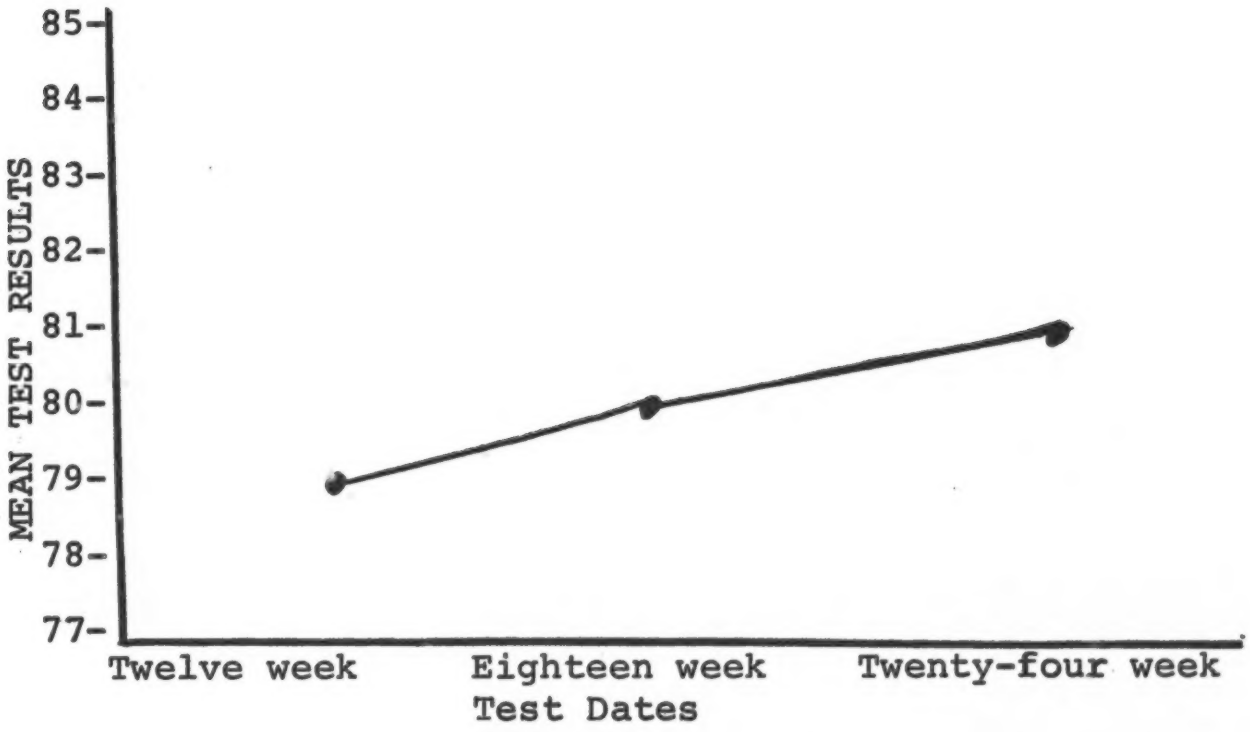

Figure 4. Mean Results of the Total Reading Scores on the Gates Primary Reading Test of the Experimental Group

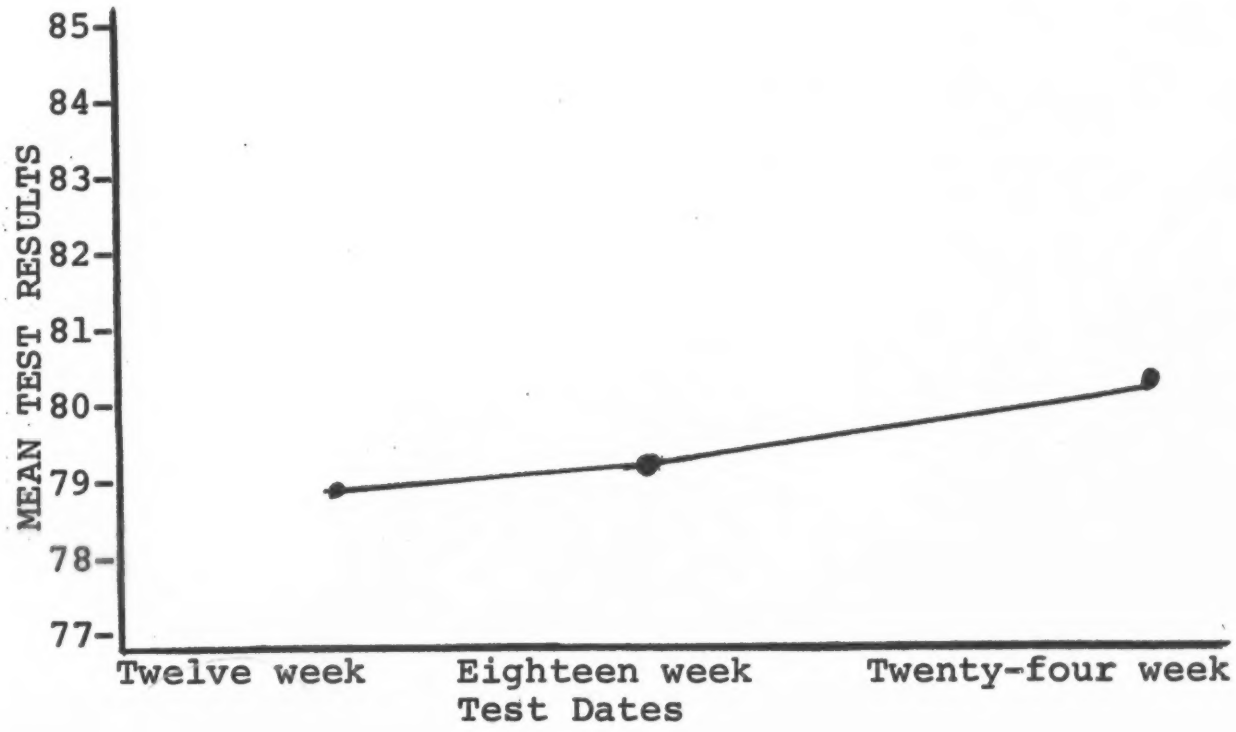

Figure 5. Total Reading Scores of the Gates Primary Reading Test of the Control Group

As indicated in Figure 5, each of the twenty-four subjects in the Control Group scored 79 on the Gates Primary Reading Test Form I. This would indicate a mean score of 79 for this test. The eighteen week test mean on total reading scores of the Control Group as measured by Form II of the Gates Primary Reading Test was 79.08, an increase of .08 mean score units over the twelve week test. The scores on this test ranged from 79 through 81. The twenty-four week test of the Control Group, as determined by the Gates Primary Reading Test Form III was 80.04, which is an increase of 1.04 mean score units over the twelve week score and an increase of .96 mean score units over the eighteen week score.

The twelve, eighteen and twenty-four week test result means of the Control Group and the Experimental Group on the Gates Word Recognition Test are collectively presented in graphic form in Figure 6.

The twelve week mean of both the Control Group and the Experimental Group was 79. The mean score of the Control Group at the eighteen week testing was 79.50, and the mean score of the Experimental Group was 80.33. The mean difference was significant at the .01 level of confidence. The twenty-four week mean of the Control Group was 80.41 and of the Experimental Group was 80.79.

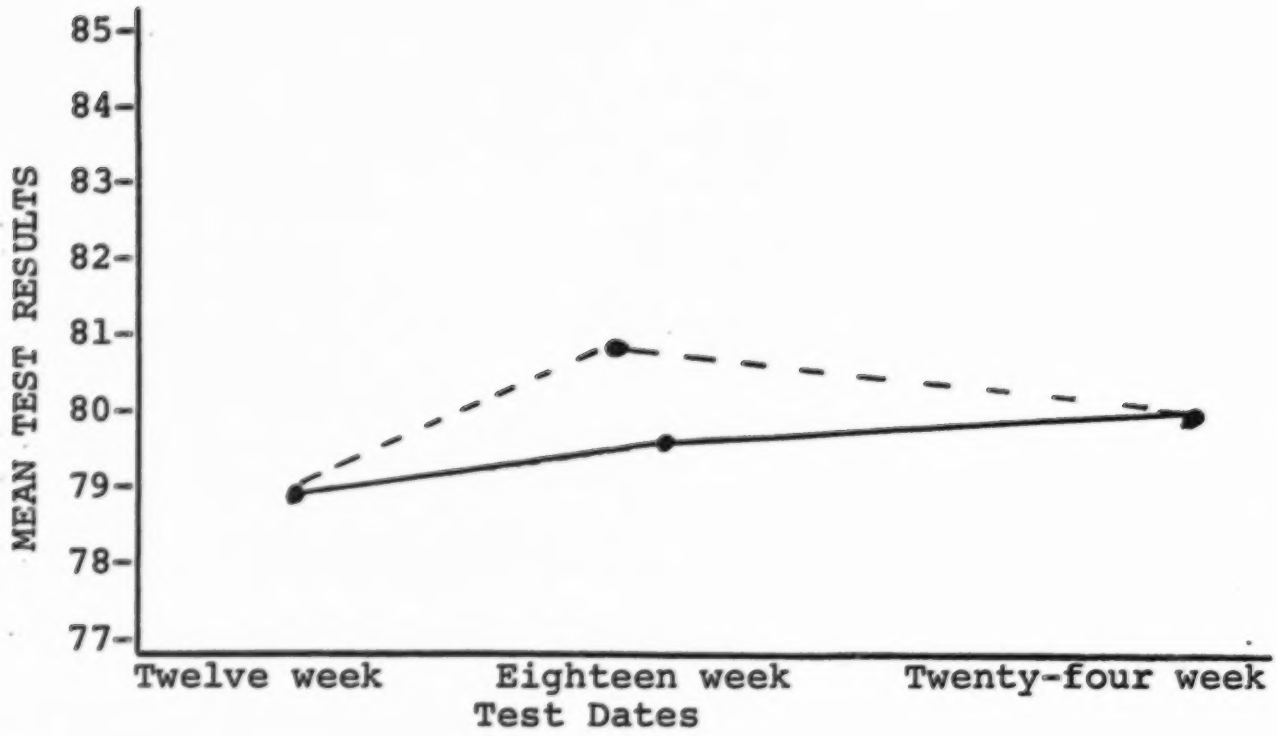

Figure 6. Mean Test Results of the Control Group and the Experimental Group on the Gates Word Recognition Test

----Experimental Group

____Control Group

The twelve, eighteen, and twenty-four week means on the total reading scores of the Control Group and the Experimental Group are graphically presented in Figure 7.

The twelve week mean of both the Control Group and the Experimental Group was 79. The eighteen week mean score of the Control group was 79.08 and of the Experimental Group was 79.66. The mean difference was significant at the .05 level of confidence. The twenty-four week mean score of the Control Group was 80.04 and of the Experimental Group was 80.37.

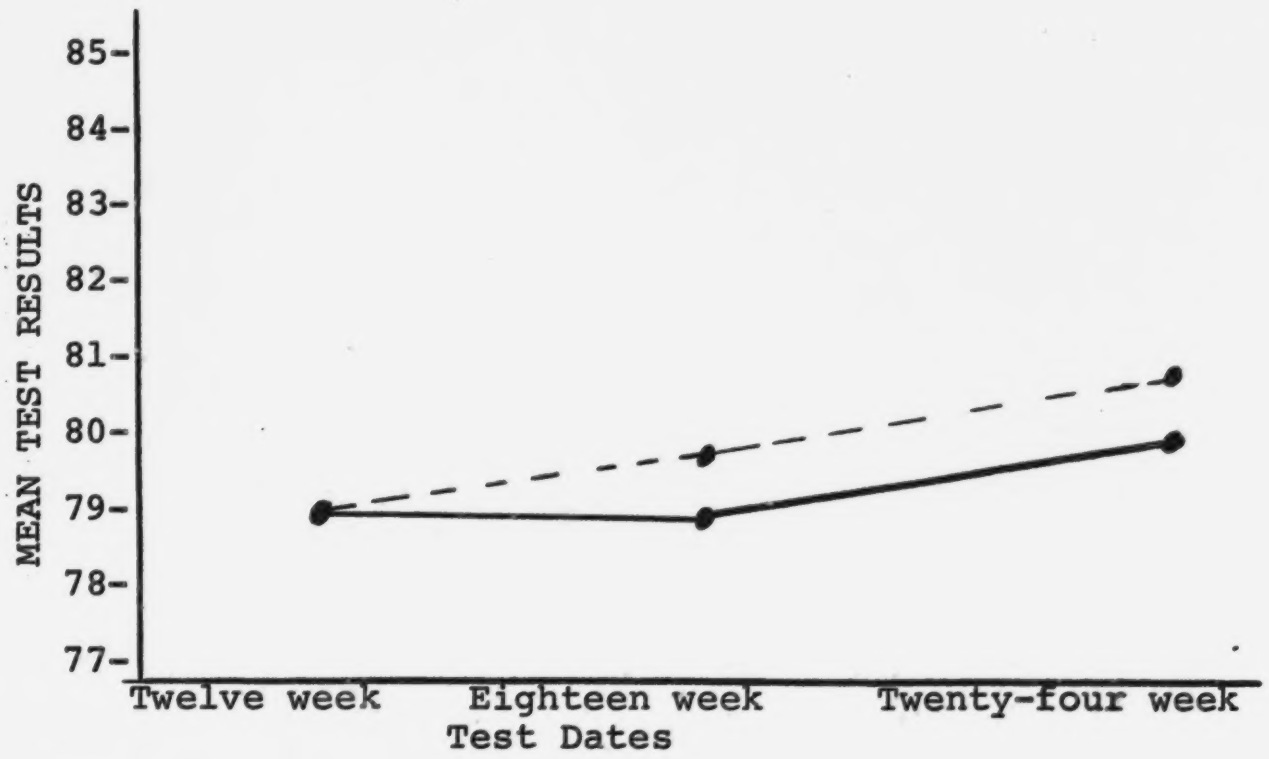

Figure 7. Mean Test Results of the Experimental Group and the Control Group on the Gates Total Reading Scores

----Experimental Group
____Control Group

Summary

The data presented in Figure 6 would indicate that the eighteen week test results rejected the null hypothesis while the data for the twenty-four week test supported the null hypothesis that there would be no difference between the Control Group and the Experimental Group in word recognition.

The Experimental Group showed a greater rate of increase than did the Control Group for the eighteen week period, but the Control Group showed a greater rate of increase during the last six weeks; thus, there is no

difference between the Control Group and the Experimental Group on word recognition at the end of the twenty-four week period.

Analysis of the data in Figure 7 (eighteen week test mean scores) causes one to partially reject the null hypothesis that there would be no difference between the Control Group and the Experimental Group in total reading score. Lack of significant differences in the scores of the twenty-four week testing does not allow the null hypothesis to be rejected.

The Experimental Group showed a greater rate of increase than did the Control Group at the eighteen week period while the Control Group showed a greater increase at the end of the twenty-four weeks. Thus, there was no significant difference between the total reading score of the Control Group and the Experimental Group.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine the effectiveness of visual perceptual training upon word recognition and subsequent reading achievement of the culturally disadvantaged pupil who is in the first grade.

Summary

An exploratory training program in visual perception for forty-eight culturally disadvantaged pupils in the first grade was conducted at the East Livingston Elementary School, Albany, Louisiana during the school year 1967-1968. The regular curriculum was not altered from that specified in the parish lesson plan.

The basal reading readiness program was supplemented for two Experimental Groups consisting of twelve pupils in each group through the use of the Frostig Program for the Development of Visual Perception. The two Control Groups (consisting of twelve pupils in each group) received the readiness program as outlined in the Teacher's Manual of the basal series.

During the time that the Experimental Groups were receiving the visual perceptual training, the Control Groups participated in unrelated activities conducted in a separate

classroom. A responsible high school student assigned to these groups played records for the pupils and led them in group singing. At the end of the visual training sessions of approximately fifteen minutes duration, the Control Groups returned to their respective classrooms and resumed their regular classroom activities.

The Experimental Groups were assigned supplementary classroom activities in addition to their regular classroom procedures. The additional activities consisted of participation in the Frostig Program for the Development of Visual Perception for a period of twelve weeks.

At the end of the twelve week training period, the pupils were administered the Gates Primary Reading Test Form I. The pupils were administered Form II of the Gates Primary Reading Test at the end of eighteen weeks, and Form III of the Gates Primary Reading Test at the end of twenty-four weeks.

An analysis of covariance was employed to test the relevance of the experimental variables. The results obtained through the administration of the three different forms of the Gates Primary Reading Test were the criterion measure for the analysis.

Conclusions

On the basis of the results obtained, the following conclusions appear tenable:

1. Supplementation of the basal reading program with the Frostig Program for the Development of Visual Perception did not appear to yield a significant difference in the means on word recognition of the Experimental Groups, who received this training, and the Control Groups, who did not receive supplementary materials, as measured by the Gates Primary Reading Tests. The Experimental Groups did exhibit a greater gain in word recognition between the twelve week and the eighteen week testing periods. This significant difference had disappeared by the time the twenty-four week testing was administered.

2. Supplementation of the basal reading program with the Frostig Program for the Development of Visual Perception for the Experimental Group indicated a significant difference in total reading score above the Control Group at the eighteen week testing period, however, as with word recognition, this difference had disappeared by the time the twenty-four week test was administered.

3. Supplementation of the basal reading program with the Frostig Program for the Development of Visual Perception for the Experimental Group indicated no difference in progress of reading achievement, as both the Experimental Group and the Control Group showed equal gains on both total reading score and word recognition.

This study indicated that the introduction of this particular type program is not of lasting value. One might conject that the extension of the regression lines, and the angle of the regression lines as shown in the tables for the twenty-four week testing program, if continued, would show that the Control Group would actually surpass the Experimental Group. This could indicate that we would be introducing habits in this program that would cause a continual setback for the culturally disadvantaged pupil.

Recommendations

On the basis of the data analyzed throughout this study, the following recommendations are offered:

1. Increase the dimension of the investigation by extending the Frostig Program for the Development of Visual Perception to allow an increased number of lessons to be taught to the Experimental Group.

2. Measure the reading achievement at the end of the second grade and the third grade in order to determine the progress of reading achievement of the individual over a longer period of time. Such a recommendation would offer an opportunity to study the long-term effect of the visual training program on reading achievement more intensively.

3. The results of this study indicate that often research designs are too short to indicate lasting results. Further research should by performed extending the time of

treatment in order to determine if the Control Group would actually surpass the Experimental Group. Caution should be used in generalizing on short studies implying the success of this or any other method of instruction.

4. Increase the dimension of investigation by extending the grade limits of the basal reading readiness program for the culturally disadvantaged pupil in an effort to determine the effectiveness of the basal readiness program as compared to the Frostig Program for the Development of Visual Perception. An investigation of this, extended over a longer period of time, would enable one to ascertain better if, in fact, the Control Group would surpass the Experimental Group as tentatively indicated by the results of this study.

5. Though not conclusive, this study does suggest that some early changes are possible in word recognition and total reading achievement of the culturally disadvantaged pupil; therefore, it behooves educators to explore this factor of effectiveness of visual perceptual training more thoroughly. Different measures and different operational definitions of visual perceptual skills and training should be employed to determine whether, in fact, similar results would be obtained.

6. Make available to teachers in teacher-training programs, valid information about new supplementary materials

as compared to traditional materials as determined through scientific studies. This study does not support claims of the Frostig Program of producing significant or practical improvement in word recognition or visual perceptual skills of a lasting nature. At this point, we would question the value of the additional time and expense of the Frostig or similar programs without ample validational information.

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